REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Examiner Benton is thanked for a courteous interview with the undersigned on February 18, 2005. The following remarks include a summary of remarks offered by the undersigned during such interview.

The rejection of claims 1 and 3-11 under 35 U.S.C. §102 as allegedly anticipated by Hirano '426 is respectfully traversed.

Hirano is directed to an evaporative cooling system rather than a recirculating liquid cooling system. Apparently this fundamental distinction has been overlooked because the Examiner's comments are in large part incorrect concerning the teachings of Hirano '426.

For example, conduit 246 is not a bypass fluid line but, instead, an "overflow conduit 246" (9:1-2) communicating between "purge port 244" and the liquid reservoir 226. Electromagnetically actuated valve 248 does not control the flow rate of fluid (whether gaseous or liquid) flowing through overflow conduit 246. Instead, valve 248 is only capable of on/off operation and it is normally closed (e.g., see 9:3-4). In addition, element 224 in Hirano '426 is a small capacity electrically driven pump (e.g., see 8:35-37) and not a "coolant temperature sensor" of any sort whatsoever. Indeed, Hirano '426 only teaches temperature sensor 254 disposed on a cylinder head to detect coolant temperature (i.e., boiling point) in the engine block.

The Examiner's assertion that Hirano '426 somehow teaches control of "the coolant temperature of the coolant in the circulation line system by controlling the flow rate control

means" [identified by the Examiner as valve 248] is demonstrably erroneous. The coolant temperature in Hirano et al. '426 is controlled by controlling pressurization of the coolant system and thereby controlling the coolant boiling point (e.g., see Figure 6 and associated text). As is well known, in an evaporative cooling system of this type, the coolant in the engine block will reside at a temperature defined by the coolant boiling point which is, in turn, controllable by controlling pressurization of the system.

The Examiner goes on to erroneously assert that Hirano '426 somehow includes an abnormality diagnosis of the "flow rate control means" (presumably the valve 248 identified by the Examiner).

Similarly, the Examiner goes on to make various assertions about how the Hirano et al. '426 system operates – all of which appear to be clearly erroneous – and none of which are identified with any basis in the actual Hirano et al. '426 reference. If the Examiner continues to believe that his discussion of this reference is accurate and correct, then it is respectfully requested that explicit bases be identified in this reference to support each assertion being made.

Claim 1 has been amended so as to improve its format and to emphasize the fact that it is claiming an abnormality diagnosis apparatus in the context of a recirculating liquid cooling system. Among other things, claim 1 requires a coolant temperature control means for controlling the coolant temperature in the circulation line system by controlling the flow rate in the bypass line. Clearly, Hirano '426 does not control coolant temperature by controlling operation of valve 248 in the overflow conduit 246.

Claim 1 also requires an abnormality diagnosis means for diagnosing the flow rate control means so as to determine whether an abnormality exists based on behavior of the measured coolant temperature which is measured through the coolant temperature sensor during a warm-up period of the internal combustion engine. The claim also requires the coolant temperature sensor to measure coolant temperature in the circulation line system. None of this corresponds to any conceivable teaching or suggestion of Hirano. '426.

Dependent claims 3-9 add yet further patentable distinction with respect to Hirano '426. In view of the fundamental deficiencies already noted above with respect to independent claim 1, it is not believed necessary at this time to further detail the errors in the Examiner's rejections of these dependent claims. In this regard, it is noted that claim 6 has now been rewritten in independent format having a scope identical to its scope as originally filed.

The rejection of claim 2 under 35 U.S.C. §103 as allegedly being made "obvious" based on the same single Hirano '426 reference is also respectfully traversed. In view of the fundamental deficiencies of Hirano '426 already noted above for parent claim 1, it is not believed that any further comment is required at this time.

Actually, Hirano '426 does show a pump 224. However, for reasons already noted above, Hirano remains fundamentally deficient with respect to virtually all recitations of parent claim 1 and, in any event, clearly does not teach or suggest the applicant's claimed invention.

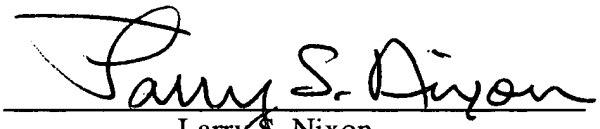
Attention is directed to new apparatus claims 12-14 which depend from claim 10 and are thus clearly in allowable form for at least reasons already noted -- as well as additional reasons related to the additional recitations of these claims.

Finally, attention is directed to new method claims 15-28 which can be analogized in some respects to apparatus claims 1-14 respectively. These claims are also believed to be in fully allowable condition.

Accordingly, this entire application is now believed to be in allowable condition and a formal Notice to that effect is respectfully solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Larry S. Nixon
Reg. No. 25,640

LSN:vc
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100